GENETIC ASSAY FOR PROTEIN NUCLEAR TRANSPORT

ABSTRACT OF THE DISCLOSURE

The invention provides methods of determining the presence of a nuclear localization signal and/or the presence of a nuclear export signal in a protein of interest. The invention further provides chimeric nucleic acids and recombinant host cells for use in such methods. Additionally provided is a nucleic acid molecule encoding a modified LexA protein, wherein the modified LexA protein has no nuclear localization signal, as well as the modified LexA protein itself. In the nuclear import assay, if a protein of interest fused to a mLexA-Gal4AD hybrid contains a functional NLS, the fusion product will enter the yeast cell nucleus and activate the expression of reporter genes. In the nuclear export assay, if a protein of interest fused to a mLexA-SV40 NLS-Gal4AD hybrid contains a functional NES, the fusion product localized to the cell nucleus will exit into the cytoplasm, decreasing the reporter gene expression levels.